



# **Intelligent Training Technology**

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# **ExpertTrain™**



# **What are the Major Components of ExpertTrain?**

- **Domain Expert**
- **Instructional Expert**
- **Learner Model**
- **Student-Device Interface**



# What is the Domain Expert?



- **A Software Component**
  - **Contains Subject-Matter Expertise**
    - » “Mentor”
    - » “Coach”
  - **Forms Expectations**
  - **Assesses Student Performance**



# What is the Instructional Expert?



- **A Software Component**
  - **Captures Instructional Expertise**
  - **Determines Feedback**



# What is the Learner Model?

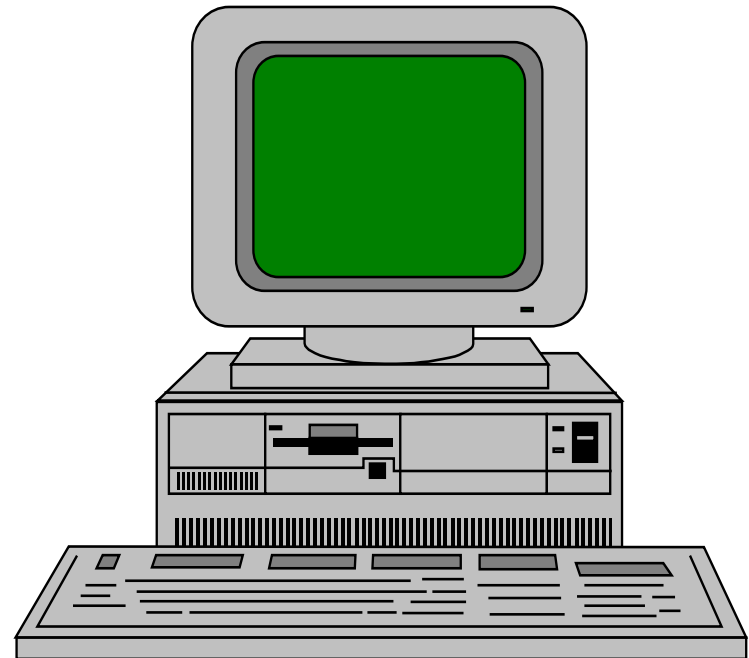
- **The System's Memory for Who the Learner Is**
- **Multidimensional**
  - **Mastery**
  - **Instructional History**
  - **Feedback History**
- **Learner-Specific**
- **Update in Real-Time**
- **Mine-able**
  - **Trends**
  - **Aggregations**





# What is the Learner-Device Interface?

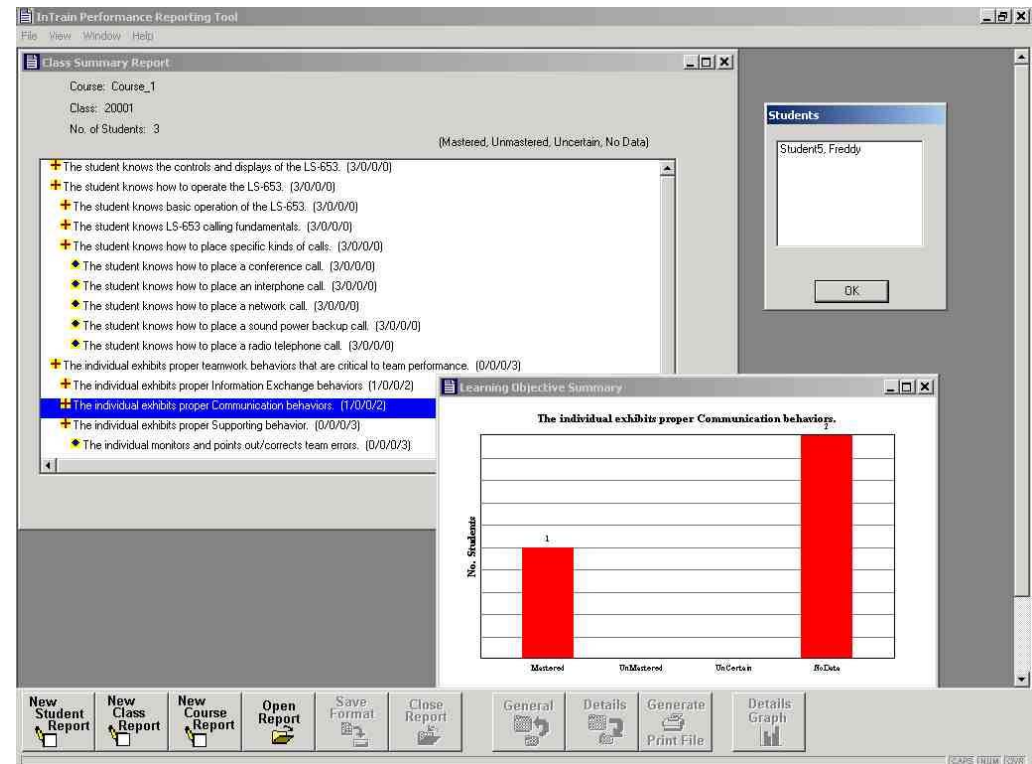
- **Medium of Communication**
  - **Design Features**
    - » **Ease of Use**
    - » **Cognitive Fidelity**





# Performance Reporting

- Provides Data-Mining Interface
  - Individuals, Classes, Courses
  - Composite, Lessons, Instances
  - Student Mastery Data







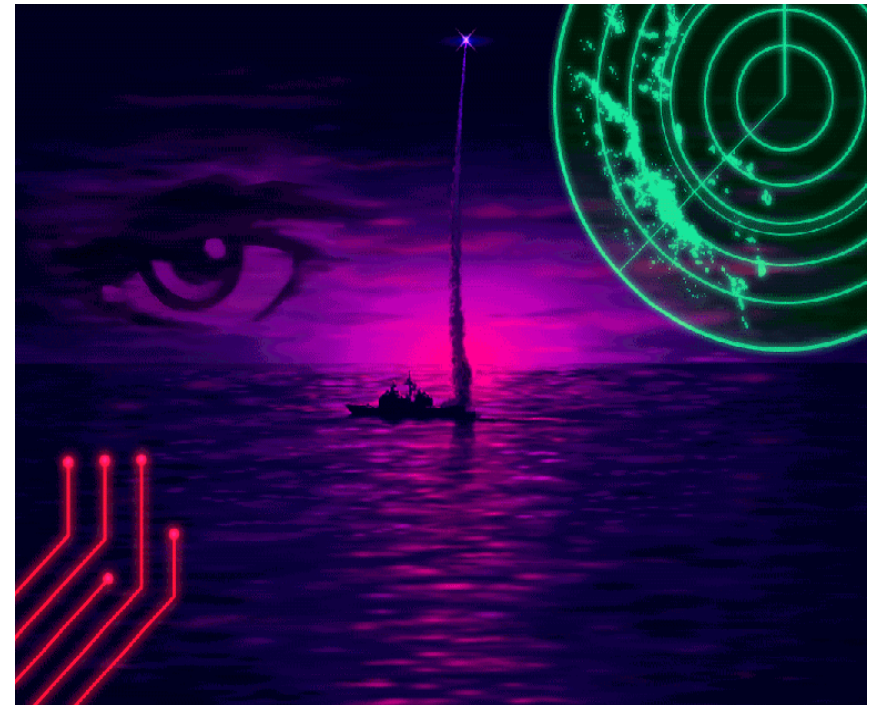
## **Is The Technology Mature?**

- **RSC ITA- Radar System Controller Intelligent Training Aid**
- **ATO ITA – Artillery Targeting Officer Intelligent Training Aid**
- **MLRS VST- Multiple Launch Rocket System Virtual Sand Table**



# **Radar System Controller Intelligent Training Aid (RSC ITA)**

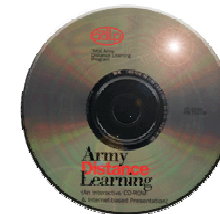
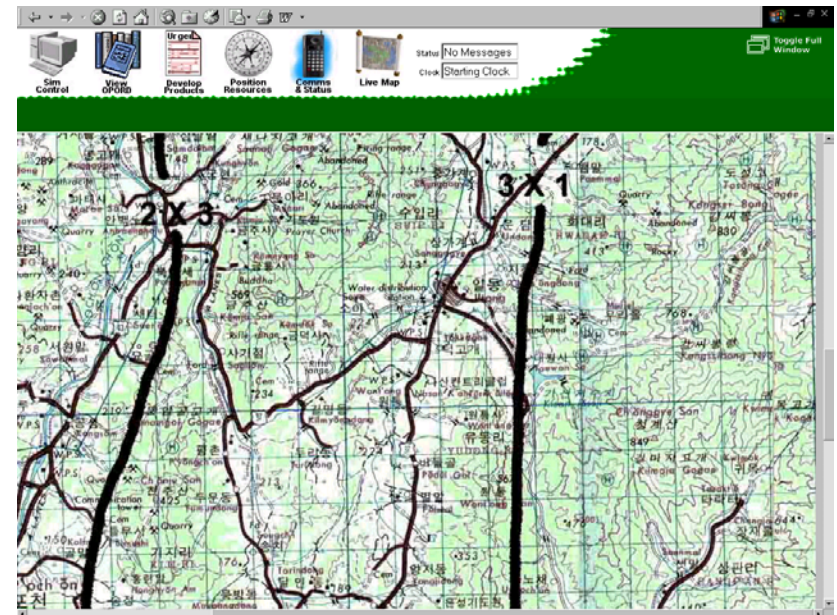
- **Used at Aegis Training and Readiness Center Since 1994**
- **Cost Effective PC-based Simulation**
- **Four-fold Increase in Student Throughput Without Additional Instructors**
- **Improved Student Performance**
  - **Understood “Buttonology” and Operational Concepts (Anecdotal)**





# Artillery Targeting Officer Intelligent Training Aid (ATO ITA)

- **Advanced Distributed Learning Training Aid for Warrant Officers at the U.S. Army Field Artillery School at Ft. Sill, OK**
- **Employs Intelligent Tutoring and Simulation Technology**
- **Single or multi-player Web-based delivery**
- **Supports Training in Tactics, Techniques, and Procedures for Targeting at the Brigade and Division level, and the Military Decision Making Process (MDMP)**





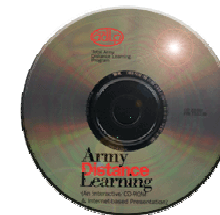
# **Artillery Targeting Officer Intelligent Training Aid (ATO ITA)**

- **Designed and developed Intelligent Training Courseware for the Field Artillery Warrant Officer (131A) Basic Course.**
- **This course focuses on the duties and responsibilities of the Targeting Officer at Brigade and Division level, Counter-fire Officer at Division Artillery, and the Field Artillery Intelligence Officer at Division level.**
- **This courseware focuses on developing tactics, techniques, and procedures of Targeting, Intelligence, and Attack systems at Brigade and Division level.**
- **Students develop targeting products to support a Maneuver Brigade plan including the High Payoff Target List, Attack Guidance Matrix, Target Selection Standards, Sensor Attack Matrix, and the Fire Support Synchronization Matrix. Students will also develop the Fire Support Plan.**



# Multiple Launch Rocket System Virtual Sand Table (MLRS VST)

- **Advanced Distributed Learning application developed for the U.S. Army Field Artillery School**
- **Employs intelligent tutoring technology with 3-D terrain visualization**
- **Single or multi-player use via the Internet or LAN**
- **Supports officer and NCO training in tactics, techniques, and procedures for:**
  - **Reconnaissance, Selection, and Occupation of Position (RSOP)**
  - **Firing Operations**
  - **Survivability**







# Multiple Launch Rocket System Virtual Sand Table (MLRS VST)

- Replaces the conventional group sand table exercise
- PC-based, provides individual training to develop/improve RSOP skills
- High fidelity 2-D/3-D simulation supports student visualization of routes and position selection decision-making
- Option of single player or multi-player mode with two students acting as Firing Platoon Leaders and one acting as Battery Commander
- After Action Review allows for a critique of the exercise based on student performance assessed by the “intelligent tutor”
- ARI Study shows a 35% increase in learning effectiveness by students utilizing the MLRS VST versus students trained using the conventional sand table exercise

# MLRS VST

The background of the application window is a photograph of a Multiple Launch Rocket System (MLRS) vehicle. The vehicle is a tracked military vehicle, and a large missile is being launched from its rear. A massive, bright orange and white explosion is visible behind the vehicle, and the missile is seen in mid-air to the right, trailing a large plume of smoke and fire.

**About This Training Exercise**

**Conduct Training Exercise**

**After Action Review**

**About This Application**

**Help**

**Exit**

### **Message**

In this scenario you are the 1st Firing Platoon Leader and your callsign is Red 16. Your mission takes place in Germany. The enemy is observing you from 1600mils (from the east). The current time is 0500. Good luck.

OK



Points (FP's)

reas (HA's)

Points (RP's)

Control  
(SCP's)

Operations  
(POC)

- Ammunition Holding Area (AHA)

Continue





## Develop Your OPAREA



- Firing Points (FP's)
- Hide Areas (HA's)
- Reload Points (RP's)
- Survey Control Points (SCP's)
- Platoon Operations Control (POC)
- Ammunition Holding Area (AHA)

View OPORD

View Map

View Battlefield

File/Options Menu

Map Recon

Map Recon Overlay

Ground Recon Overlay

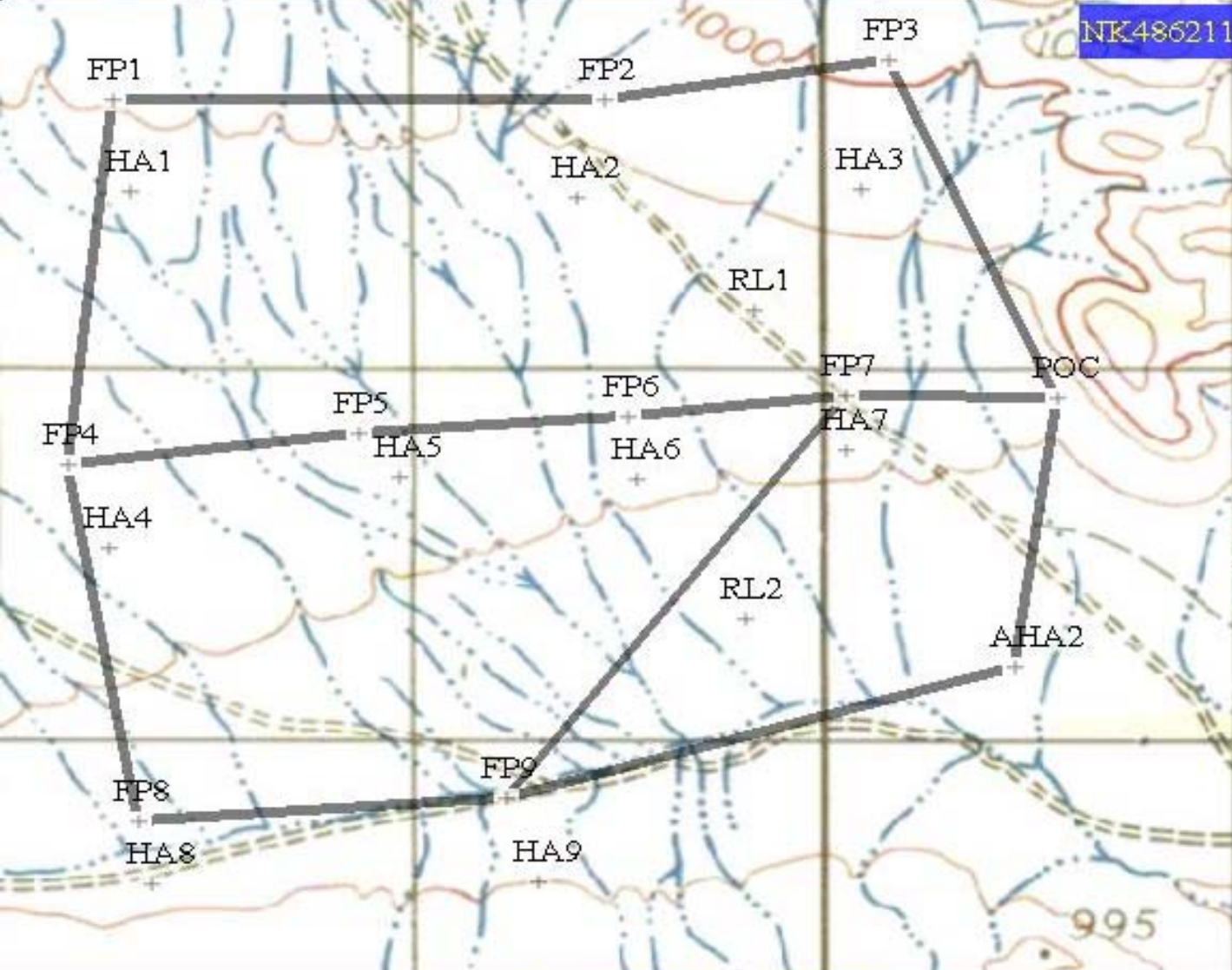
3K View

Mark Start  
PointMark  
Release  
PointMark Che  
PointDraw Primary  
Route

Use Formation

Draw Secondary  
Route

Column



Red 12

Red 13

Return To Previous Toolbar

Black 6

Red 16

Red 14

Red 11

Red 12

Red 13

Black 41

Black 42

Black 43

Black 44

Red 17

Black 4

Map Overlay

1stCBT

Simulation Time: 0503

Pause

Help

Exit

Communications Window



View OPORD

View Map

View Battlefield

File/Options Menu

Ground Recon

## The student knows how to identify all the necessary positions during the map recon

Click on buttons for more details

- ☒ The student knows how to identify potential firing points
- ☒ The student knows how to identify potential hide areas
- ☒ The student knows how to identify potential reload points
- ☒ The student knows how to identify potential survey control points
- ☒ The student knows how to identify potential Platoon Operations Center location
- ☒ The student knows how to identify potential Ammunition Holding Area

Check  
CoverCheck  
MaskingCheck  
Ground  
ConditionCheck  
Enemy  
PresenceCheck  
Bridge  
ClassCheck  
Comms

Driver Start

Driver Stop

Send  
Report / RequestSend Text  
Message

Select Positions

Specify  
Movement

▼ Black 6

▼ Red 14

Red 16

▶ Red 11

▶ Red 12

▶ Red 13

▶ Black 41

▶ Black 42

▶ Black 43

▶ Black 44

▶ Red 17

Black 4

▼ Map Overlay

▶ FP1

▶ FP2

▶ FP3

Simulation Time: 0308

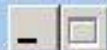
Previous  
Screen

OK

Pause

Help

Exit



View OPORD

View Map

View Battlefield

File/Options Menu

Map Recon

## The student knows how to perform a map recon

Click on buttons for more details



The student knows how to identify all the necessary positions during the map recon



The student maps out the primary movement route during the map recon



The student performs a map recon

Message

You only selected 0 Reload Points, I expected you to select 2 Reload Points.

OK

Mark OPAREA

Mark Potential Ambush Points

Mark Friendly Position

Conduct Ground Recon

Select Positions

Specify Movement

▼ Black 6

▼ Red 16

Red 14

▶ Red 11

▶ Red 12

▶ Red 13

▶ Black 41

▶ Black 42

▶ Black 43

▶ Black 44

▶ Red 17

Black 4

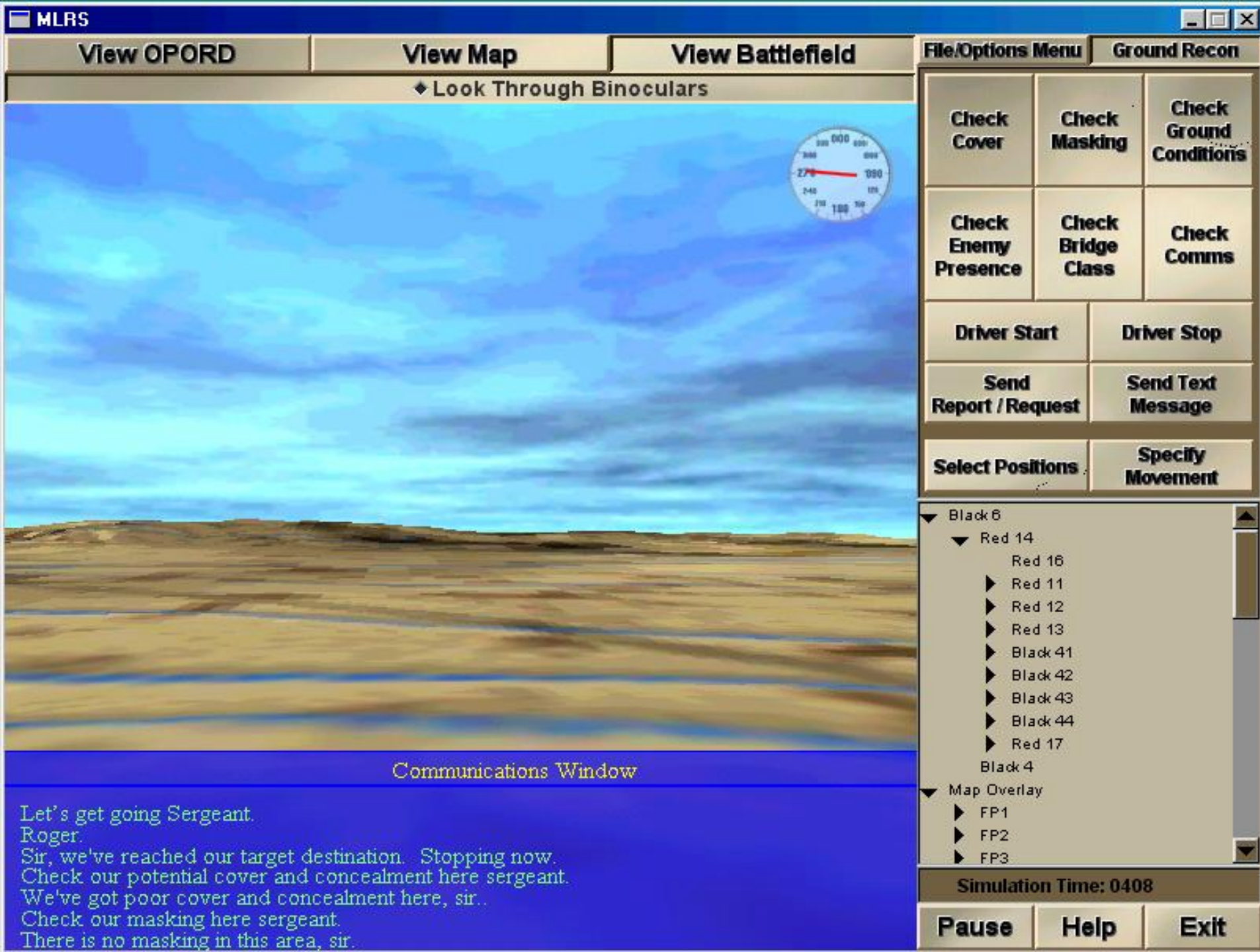
▼ Map Overlay

▶ 1stCBT

▶ 1stCBT

Simulation Time: 0504





**View OPORD****View Map****View Battlefield****File/Options Menu****Ground Recon**

◆ Look Through Binoculars

**Message**

Periodic radio checks with higher and lower elements may provide information on current conditions that may affect your plan.

**OK****Check  
Cover****Check  
Masking****Check  
Ground  
Condition****Check  
Enemy  
Presence****Check  
Bridge  
Class****Check  
Comms****Driver Start****Driver Stop****Send  
Report / Request****Send Text  
Message****Select Positions****Specify  
Movement**

▼ Black 6

▼ Red 16

Red 14

▶ Red 11

▶ Red 12

▶ Red 13

▶ Black 41

▶ Black 42

▶ Black 43

▶ Black 44

▶ Red 17

Black 4

▼ Map Overlay

▶ 1stCBT

▶ 1stCBT

**Simulation Time: 0528****Pause****Help****Exit**

Communications Window

There is no masking in this area, sir.  
Do you see any sign of the enemy from here sergeant?  
No sir. There is no sign of enemy presence here.  
Let's get going Sergeant.



# The student knows how to perform ground recon

Click on buttons for more details

- ☒ The student knows how to ensure that cover and concealment is available at all positions and routes that require it
- ☒ The student knows what the azimuth of fire is to ensure that there is no potential masking at any firing point along the azimuth
- ☐ The student knows how to ensure that ground conditions at all key positions allow traffic by the necessary vehicals
- ☐ The student knows how to consider bridge classification to ensure that it is undamaged and can support the weight of a launcher
- ☒ The student knows how to make observations to ensure that there is no enemy presence in the area or the route to it
- ☐ The student knows how to coordinate with friendly units to avoid positioning conflicts and provide possible defense
- ☒ The student knows how to check Comms to receive reports on conditions during ground recon

## AAR Forms & Report

- ☐ OPORD
- ☒ Planning Activity

Print

## Planning Map Overlays

Print

## Exercise Mastery

Previous Screen

Main Menu

Help



View OPORD

View Map

View Battlefield

File/Options Menu

Occupation

◆ Look Through Binoculars

Check Comms

Check Vehicle Startup  
And Reload

Send Report / Request

Send Text Message

Select Positions

Specify  
Movement

- ▶ Red 11
- ▶ Red 12
- ▶ Red 13
- ▶ Black 41
- ▶ Black 42
- ▶ Black 43
- ▶ Black 44
- ▶ Red 17

Black 4

▼ Map Overlay

- ▶ FP1
- ▶ FP2
- ▶ FP3
- ▶ FP4
- ▶ FP5
- ▶ FP6

Simulation Time: 0515

Pause

Help

Exit

Communications Window



# The student knows how to organize the battle area

Click on buttons for more details

- ☐ The student knows how to identify and coordinate units
- ☒ The student knows how to perform a map recon
- ☐ The student knows how to perform ground recon
- ☐ The student knows to notify upon completing ground recon
- ☒ The student knows how to select firing platoon positioning

Previous  
Screen

## AAR Forms & Report

- ☒ OPORD
- ☐ Planning Activity

Print

## Planning Map Overlays

Print

## Exercise Mastery

Main Menu

Help



# Questions?

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